

**Listing of the Claims:**

The following is a complete listing of all the claims in the application, with an indication of the status of each:

- 1        1 (Currently Amended).        An image editing apparatus which edits
- 2        image data which has been coded in accordance with an image coding
- 3        method, wherein a plurality of image frames constituting the image data
- 4        are divided into groups, each image frame is coded into one of a first type
- 5        image frame which is created by coding data in the image frame, a second
- 6        type image frame which is created by performing inter-frame
- 7        mono-directional prediction based on a past image frame and coding a
- 8        difference obtained by the prediction, and a third type image frame which
- 9        is created by performing inter-frame dual-directional prediction based on a
- 10       past image frame and a future image frame and coding differences
- 11       obtained by the prediction, and the plurality of image frames are coded so
- 12       that a head frame of each group may be the first type image frame, said
- 13       apparatus comprising:
- 14              an image coder which codes each of frames of image data into one
- 15              of the first type image frame, the second type image frame, and the third
- 16              type image frame;
- 17              an image decoder which decodes the image frame coded by said
- 18              image coder; and
- 19              an image data analyzer which analyzes a picture header of a head
- 20              frame in the area to be edited and determines types of image frames
- 21              included in each group,
- 22              wherein said image data analyzer determines whether or not a head
- 23              group which is arranged at a head of an editing target area included in the
- 24              image data is a closed group which does not include the third type image
- 25              frame which is to be decoded by referring to an image frame included in a
- 26              group which is arranged before the head group; and

27           in a case where said image data analyzer determines that the head  
28   group is not the closed group, said image coder converts a portion near the  
29   head of the editing target area into the closed group, wherein:  
30           said image coding method is an MPEG method;  
31           each of the groups is a GOP of MPEG;  
32           the first type image frame is an I picture;  
33           the second type image frame is a P picture; and  
34           the third type image frame is a B picture; and wherein  
35           in a case where said image data analyzer determines that a second  
36   GOP next to a first GOP to which a start point of an editing target area  
37   belongs is not a closed GOP, said image coder converts the second GOP  
38   into a closed GOP by converting frames in the editing target area between  
39   an I picture at a head of the second GOP and a P picture such that the  
40   second GOP includes no B picture.

1       2 (Original). The image editing apparatus according to claim 1, wherein  
2   said image data analyzer determines whether or not the third type image  
3   frame included in the head group is an image frame which is to be decoded  
4   by referring to an image frame included in a group which is arranged  
5   before the head group.

1       3 (Original). The image editing apparatus according to claim 2, wherein:  
2   in a case where said image data analyzer determines that the third type  
3   image frame is to be decoded by referring to an image, frame included in  
4   the group arranged before the head group, the image decoder decodes the  
5   third type image frame; and  
6           said image coder codes the third type image frame which is  
7   determined by said image data analyzer as an image frame to be decoded  
8   by referring to an image frame included in the group arranged before the  
9   head group, and is decoded by said image decoder, into an image frame

10 which is able to be decoded without referring to an image frame included  
11 in the group arranged before the head group.

4 (Canceled).

1 5 (Currently Amended). An image editing apparatus which edits  
2 image data which has been coded in accordance with an MPEG method,  
3 said apparatus comprising:  
4 image data analyzing means for analyzing a picture header of a  
5 head frame in the area to be edited and a structure of image frames  
6 included in each GOP of the image data, and determining an attribute of  
7 each GOP and picture types of image frames included in each GOP;  
8 conversion point detecting means for detecting a GOP which needs  
9 to be re-coded from an editing target area of the image data, and an image  
10 frame which needs to be re-coded from the detected GOP;  
11 image decoding means for decoding the image frame which needs  
12 to be re-coded detected by said conversion point detecting means;  
13 GOP converting means for creating a new GOP by re-coding the  
14 image frame decoded by said image expanding means; and  
15 image data concatenating means for concatenating a plurality of  
16 image data which are cut out as editing target areas,  
17 wherein said image data analyzing means determines whether or  
18 not a head GOP which is arranged at a head of the editing target area is a  
19 closed GOP; and  
20 in a case where said image data analyzing means determines that  
21 the head GOP of the editing target area is not a closed GOP, said GOP  
22 converting means converts a portion near the head of the editing target area  
23 into a closed GOP; and wherein  
24 in a case where said image data analyzer determines that a second  
25 GOP next to a first GOP to which a start point of an editing target area

26       belongs is not a closed GOP, said image coder converts the second GOP  
27       into a closed GOP by converting frames in the editing target area between  
28       an I picture at a head of the second GOP and a P picture such that the  
29       second GOP includes no B picture.

1       6 (Currently Amended).       An image editing apparatus which edits  
2       image data which has been coded in accordance with an image coding  
3       method, wherein a plurality of image frames constituting the image data  
4       are divided into groups, each image frame is coded into one of a first type  
5       image frame which is created by coding based on data in the image frame,  
6       a second type image frame which is created by performing inter-frame  
7       mono-directional prediction based on a past image frame, and a third type  
8       image frame which is created by performing inter-frame dual-directional  
9       prediction based on a past image frame and a future image frame, and the  
10      image data is coded so that a head frame of each group may be the first  
11      type image frame, said apparatus comprising:

12             an image encoder which codes each of frames of image data into  
13             one of the first type image frame, the second type image frame, and the  
14             third type image frame in accordance with said image coding method;

15             an image decoder which decodes the image frame coded by said  
16             image encoder; and

17             an image data analyzer which analyzes a picture header of a head  
18             frame in the area to be edited and determines types of image frames  
19             included in each group,

20             wherein in a case where said image data analyzer determines that a  
21             head image frame which is arranged at a head of an editing target area  
22             included in the image data is not the first type image frame, said image  
23             decoder decodes the head image frame, and each image frame appearing  
24             between the head image frame and the first type image frame which  
25             appears first after the head image frame; and

26           said image encoder re-codes the image frames which are created by  
27    decoding the head image frame and each image frame appearing between  
28    the head image frame and the first type image frame which appears first  
29    after the head image frame, and re-codes the head image frame into the  
30    first type image frame, and re-codes any of the third type image frame  
31    appearing after the head image frame into an image frame which is able to  
32    be decoded without referring to an image frame arranged before the head  
33    image frame; wherein  
34           said image coding method is an MPEG method;  
35           each of the groups is a GOP of MPEG;  
36           the first type image frame is an I picture;  
37           the second type image frame is a P picture; and  
38           the third type image frame is a B picture; and wherein  
39           in a case where said image data analyzer determines that a second  
40    GOP next to a first GOP to which a start point of an editing target area  
41    belongs is not a closed GOP, said image coder converts the second GOP  
42    into a closed GOP by converting frames in the editing target area between  
43    an I picture at a head of the second GOP and a P picture such that the  
44    second GOP includes no B picture.

1       7 (Currently Amended).       The image editing apparatus which edits  
2    image data which has been coded in accordance with an image coding  
3    method, wherein a plurality of image frames constituting the image data  
4    are divided into groups, each image frame is coded into one of a first type  
5    image frame which is created by coding based on data in the image frame,  
6    a second type image frame which is created by performing inter-frame  
7    mono-directional prediction based on a past image frame, and a third type  
8    image frame which is created by performing inter-frame dual-directional  
9    prediction based on a past image frame and a future image frame, and the  
10   image data is coded so that a head frame of each group may be the first

11 type image frame, said apparatus comprising:  
12 an image encoder which codes each of frames of image data into  
13 one of the first type image frame, the second type image frame, and the  
14 third type image frame in accordance with said image coding method;  
15 an image decoder which decodes the image frame coded by said  
16 image encoder; and  
17 an image data analyzer which determines types of image frames  
18 included in each group,  
19 wherein in a case where said image data analyzer which analyzes a  
20 picture header of a head frame in the area to be edited and determines that  
21 a head image frame which is arranged at a head of an editing target area  
22 included in the image data is not the first type image frame, said image  
23 decoder decodes the head image frame, and each image frame appearing  
24 between the head image frame and the first type image frame which  
25 appears first after the head image frame;  
26 said image encoder re-codes the image frames which are created by  
27 decoding the head image frame and each image frame appearing between  
28 the head image frame and the first type image frame which appears first  
29 after the head image frame, and re-codes the head image frame into the  
30 first type image frame, and re-codes any of the third type image frame  
31 appearing after the head image frame into an image frame which is able to  
32 be decoded without referring to an image frame arranged before the head  
33 image frame, and wherein:  
34 in a case where said image data analyzer determines that the head  
35 image frame of the editing target area is not the first type image frame, the  
36 image decoder decodes any of third type image frames that appear after a  
37 first type image frame which appears first after the head image frame if any  
38 of the third type image frames is an image frame which is to be decoded by  
39 referring to an image frame which is arranged before the first type image  
40 frame; and

41           said image encoder re-codes the image frame which is created by  
42    decoding any of the third type image frame that appears after the first type  
43    image frame which appears first after the head image frame; and wherein  
44           in a case where said image data analyzer determines that a second  
45    GOP next to a first GOP to which a start point of an editing target area  
46    belongs is not a closed GOP, said image coder converts the second GOP  
47    into a closed GOP by converting frames in the editing target area between  
48    an I picture at a head of the second GOP and a P picture such that the  
49    second GOP includes no B picture.

1       8 (Original). The image editing apparatus according to claim 6,  
2           wherein when said image encoder re-codes the image frames which  
3    are created by decoding each frame appearing between the head image  
4    frame and the first type image frame which appears first after the head  
5    image frame, said image encoder re-codes any of the third type image  
6    frame that appears after the head image frame into the third type image  
7    frame that is able to be decoded without referring to an image frame which  
8    is arranged before the head image frame.

1       9 (Original). The image editing apparatus according to claim 6, wherein:  
2           in a case where said image data analyzer determines that the head  
3    image frame of the editing target area is the first type image frame, said  
4    image decoder decodes any of the third type image frame that appears after  
5    the head image frame; and  
6           said image encoder re-codes the image frame which is created by  
7    decoding any of the third type image frame that appears after the head  
8    image frame into an image frame which is able to be decoded without  
9    referring to an image frame which is arranged before the head image  
10   frame.

1        10 (Original). The image editing apparatus according to claim 6, wherein:  
2                in a case where said image data analyzer determines that the head  
3        image frame of the editing target area is the first type image frame, said  
4        image decoder decodes any of the third type image frame that appears after  
5        the head image frame; and  
6                said image encoder re-codes the image frame which is created by  
7        decoding any of the third type image frame that appears after the head  
8        image frame into the first type image frame.

1        11 (Original). The image editing apparatus according to claim 6, wherein:  
2                in a case where said image data analyzer determines that the head  
3        image frame of the editing target area is the first type image frame, said  
4        image decoder decodes any of the third type image frame that appears after  
5        the head image frame; and  
6                said image encoder re-codes the image frame which is created by  
7        decoding any of the third type image frame that appears after the head  
8        image frame into the third type image frame which is able to be decoded  
9        without referring to an image frame which is arranged before the head  
10       image frame.

12 (Canceled).

1        13 (Currently Amended). An image editing apparatus which edits image  
2        data which has been coded in accordance with an image coding method,  
3        wherein a plurality of image frames constituting the image data are divided  
4        into groups, each image frame is coded into one of a first type image frame  
5        which is created by coding based on data in the image frame, a second type  
6        image frame which is created by performing inter-frame mono-directional  
7        prediction based on a past image frame, and a third type image frame  
8        which is created by performing inter-frame dual-directional prediction



9       based on a past image frame and a future image frame, and the image data  
10       is coded so that a head frame of each group may be the first type image  
11       frame, said apparatus comprising:  
12             an image encoder which codes each of frames of image data into  
13       one of the first type image frame, the second type image frame, and the  
14       third type image frame in accordance with said image coding method;  
15             an image decoder which decodes the image frame coded by said  
16       image encoder; and  
17             an image data analyzer which analyzes a picture header of a head  
18       frame in the area to be edited and determines types of image frames  
19       included in each group,  
20             wherein said image data analyzer determines whether a first  
21       condition that the first type image frame which appears first in an editing  
22       target area included in the image data coded in accordance with said image  
23       coding method is a head image frame which is arranged at a head of a  
24       group, and  
25             a second condition that the group is a closed group which does not  
26       include the third type image frame which is to be decoded by referring to  
27       an image frame included in a group which is arranged before the group are  
28       satisfied or not; in accordance with a result of determining the first  
29       condition and the second condition, said image decoder decodes any of the  
30       third type image frame that appears after the first type image frame  
31       appearing first in the editing target area and that needs to be re-coded; and  
32       said image encoder re-codes the image frame which is created by decoding  
33       any of the third type image frame that appears after the first type image  
34       frame which appears first in the editing target area; wherein  
35             said image coding method is an MPEG method;  
36             each of the groups is a GOP of MPEG;  
37             the first type image frame is an I picture;  
38             the second type image frame is a P picture; and

39                   the third type image frame is a B picture; and wherein  
40                   in a case where said image data analyzer determines that a second  
41                   GOP next to a first GOP to which a start point of an editing target area  
42                   belongs is not a closed GOP, said image coder converts the second GOP  
43                   into a closed GOP by converting frames in the editing target area between  
44                   an I picture at a head of the second GOP and a P picture such that the  
45                   second GOP includes no B picture.

1           14 (Original). The image editing apparatus according to claim 13, wherein:  
2           in a case where said image data analyzer determines that one of the first  
3           condition and the second condition is not satisfied, said image decoder  
4           decodes any of the third type image frame that appears after the first type  
5           image frame which appears first in the editing target area; and  
6           said image encoder re-codes the image data which is created by decoding  
7           any of the third type image frame that appears after the first type image  
8           frame which appears first in the editing target area.

1           15 (Original). The image editing apparatus according to claim 13, wherein:  
2           in a case where said image data analyzer determines that the first condition  
3           is satisfied and the second condition is not satisfied, said image encoder  
4           re-codes the image frame which is created by decoding any of the third  
5           type image frame that appears after the first type image frame which  
6           appears first in the editing target area into the first type image frame.

1           16 (Original). The image editing apparatus according to claim 13, wherein  
2           in a case where said image data analyzer determines that the first condition  
3           is satisfied and the second condition is not satisfied, said image encoder  
4           re-codes the image frame which is created by decoding any of the third  
5           type image frame that appears after the first type image frame which  
6           appears first in the editing target area into the third type image frame

7        which is able to be decoded without referring to an image frame which is  
8        arranged before the head image frame.

1        17 (Original). The image editing apparatus according to claim 13, wherein  
2        in a case where said image data analyzer determines that the first condition  
3        and the second condition are satisfied, said image editing apparatus copies  
4        the image frame which is created by decoding any of the third type image  
5        frame that appears after the first type image frame which appears first in  
6        the editing target area to the image data after being edited.

18 (Canceled).

1        19 (Currently Amended). An image editing method for editing image data  
2        which has been coded in accordance with an image coding method,  
3        wherein a plurality of image frames constituting the image data are divided  
4        into groups, each image frame is coded into one of a first type image frame  
5        which is created by coding based on data in the image frame, a second type  
6        image frame which is created by performing inter-frame mono-directional  
7        prediction based on a past image frame, and a third type image frame  
8        which is created by performing inter-frame dual-directional prediction  
9        based on a past image frame and a future image frame, and the plurality of  
10       image frames are coded so that a head frame of each group may be the first  
11       type image frame, said image editing method comprising:

12                setting an editing target area in the image data which has been  
13        coded in accordance with said image coding method;

14                determining whether a head group which is arranged at a head of  
15        the editing target area is a closed group which does not include the third  
16        type image frame which is to be decoded by referring to an image frame  
17        included in a group which is arranged before the head group; and

18                converting a portion near the head of the editing target area into the

19 closed group in a case where said determining determines that the head  
20 group is not the closed group;  
21 determining whether any of the third type image frame included in  
22 the head group of the editing target area is an image frame which is to be  
23 decoded by referring to an image frame included in a group which is  
24 arranged before the head group;  
25 decoding any of the third type image frame determined as an image  
26 frame which is to be decoded by referring to an image frame included in a  
27 group which is arranged before the head group; and  
28 coding any of the decoded third type image frame into an image  
29 frame which is able to be decoded without referring to an image frame  
30 included in a group which is arranged before the head group; and wherein  
31 said image coding method is an MPEG method;  
32 each of the groups is a GOP of MPEG;  
33 the first type image frame is an I picture;  
34 the second type image frame is a P picture; and  
35 the third type image frame is a B picture; and  
36 wherein in a case where it is determined that a second GOP next to  
37 a first GOP to which a start point of an editing target area belongs is not a  
38 closed GOP, said second GOP is converted into a closed GOP by  
39 converting frames in the editing target area between an I picture at a head  
40 of the second GOP and a P picture such that the second GOP includes no B  
41 picture.

20 (Canceled).

21(Canceled).

1 22 (Currently Amended). An image editing method for editing image data  
2 which has been coded in accordance with an MPEG method, said image

3 editing method comprising:  
4 setting one or more editing target areas in the coded image data;  
5 determining whether a head GOP which is arranged at a head of  
6 each of the one or 5 more editing target areas is a closed GOP;  
7 determining a picture type of a head image frame which is arranged  
8 at the head of each editing target area;  
9 detecting a GOP which needs to be re-coded, and an image frame  
10 which is included in the GOP and needs to be re-coded in accordance with  
11 a result of said determining whether a head GOP of each editing target area  
12 is a closed GOP, and a result of said determining a picture type of a head  
13 image frame of each editing target area; ~~and~~  
14 re-coding the detected image frame which needs to be re-coded,  
15 after it is decoded,  
16 determining a picture type of a next image frame which is arranged  
17 next to the head image frame of each editing target area, in a case where  
18 said determining whether a head GOP is a closed GOP determines that the  
19 head GOP of each editing target area is not a closed GOP;  
20 decoding the next image frame and following image frames which  
21 are B pictures, in a case where said determining a picture type of a next  
22 image frame determines that the next image frame is a B picture, after  
23 decoding an image frame which is an I picture which is encountered first  
24 when going back in a reverse direction from the head image frame, each  
25 image frame between the encountered image frame and the head image  
26 frame, and the head image frame;  
27 re-coding each decoded image frame, and re-coding the image  
28 frames which are created by decoding the following image frames which  
29 are B pictures into image frames which are able to be decoded without  
30 referring to an image frame which is arranged before the head image  
31 frame; and  
32 recording each of the image frames which are created by re-coding

33     the head image frame and the following image frames which are B pictures  
34     after those image frame are decoded, and  
35             wherein in a case where it is determined that a second GOP next to  
36     a first GOP to which a start point of an editing target area belongs is not a  
37     closed GOP, said second GOP is converted into a closed GOP by  
38     converting frames in the editing target area between an I picture at a head  
39     of the second GOP and a P picture such that the second GOP includes no B  
40     picture.

23 (Canceled).

1     24 (Original). The image editing method according to claim 22, further  
2     comprising:  
3             decoding the head image frame of each editing target area in a case  
4     where said determining a picture type of a head image frame determines  
5     that the head image frame is a P picture, and also decoding each image  
6     frame appearing after the head image frame and before an image frame  
7     which is an I picture which appears first after the head image frame; and  
8             re-coding the image frames which are created by decoding the head  
9     image frame and each image frame appearing after the head image frame,  
10     and re-coding the image frame which is created by decoding the head  
11     image frame into an image frame which is an I picture.

1     25 (Original). The image editing method according to claim 22, further  
2     comprising:  
3             expanding the image frame which needs to be re-coded by  
4     decoding:  
5             creating a new GOP by re-coding the image frame which is  
6     decoded by said expanding; and  
7             concatenating the one or more editing target areas.

1       26 (Currently Amended). An image editing method for editing image data  
2       which has been coded in accordance with an image coding method,  
3       wherein a plurality of image frames constituting the image data are divided  
4       into groups, each image frame is coded into one of a first type image frame  
5       which is created by coding based on data in the image frame, a second type  
6       image frame which is created by performing inter-frame mono-directional  
7       prediction based on a past image frame, and a third type image frame  
8       which is created by performing inter-frame dual-directional prediction  
9       based on a past image frame and a future image frame, and the image data  
10      is coded so that a head frame of each group may be the first type image  
11      frame, said image editing method comprising:  
12              setting an editing target area in the image data which has been  
13      coded in accordance with said image coding method;  
14              determining a type of a head image frame which is arranged at a  
15      head of the editing target area;  
16              decoding the head image frame of the editing target area and each  
17      image frame appearing between the head image frame and the first type  
18      image frame which appears first after the head image frame, in a case  
19      where said determining a type determines that the head image frame is not  
20      the first type image frame; and  
21              re-coding the image frames created by decoding the head image  
22      frame and each image frame appearing between the head image frame and  
23      the first type image frame which appears first after the head image frame,  
24      and re-coding the head image frame into the first type image frame, and  
25      re-coding any of the third type image frame that appears after the head  
26      image frame into an image frame which is able to be decoded without  
27      referring to an image frame which is arranged before the head image  
28      frame; wherein:  
29              said image coding method is an MPEG method;

30           each of the groups is a GOP of MPEG;  
31           the first type image frame is an I picture;  
32           the second type image frame is a P picture;  
33           the third type image frame is a B picture; and  
34           wherein in a case where it is determined that a second GOP next to  
35           a first GOP to which a start point of an editing target area belongs is not a  
36           closed GOP, said second GOP is converted into a closed GOP by  
37           converting frames in the editing target area between an I picture at a head  
38           of the second GOP and a P picture such that the second GOP includes no B  
39           picture.

1           27 (Currently Amended). An image editing method for editing image data  
2           which has been coded in accordance with an image coding method,  
3           wherein a plurality of image frames constituting the image data are divided  
4           into groups, each image frame is coded into one of a first type image frame  
5           which is created by coding based on data in the image frame, a second type  
6           image frame which is created by performing inter-frame mono-directional  
7           prediction based on a past image frame, and a third type image frame  
8           which is created by performing inter-frame dual-directional prediction  
9           based on a past image frame and a future image frame, and the image data  
10          is coded so that a head frame of each group may be the first type image  
11          frame, said image editing method comprising:  
12                  setting an editing target area in the image data which has been  
13                  coded in accordance with said image coding method;  
14                  determining a type of a head image frame which is arranged at a  
15                  head of the editing target area;  
16                  decoding the head image frame of the editing target area and each  
17                  image frame appearing between the head image frame and the first type  
18                  image frame which appears first after the head image frame, in a case  
19                  where said determining a type determines that the head image frame is not



20 the first type image frame; and  
21 re-coding the image frames created by decoding the head image  
22 frame and each image frame appearing between the head image frame and  
23 the first type image frame which appears first after the head image frame,  
24 and re-coding the head image frame into the first type image frame, and  
25 re-coding any of the third type image frame that appears after the head  
26 image frame into an image frame which is able to be decoded without  
27 referring to an image frame which is arranged before the head image  
28 frame, and further comprising:  
29 decoding any of third type image frames that appear after the first  
30 type image frame which appears first after the head image frame if any of  
31 the third type image frame is an image frames which is to be decoded by  
32 referring to an image frame which is arranged before the first type image  
33 frame, in a case where said determining a type determines that the head  
34 image frame of the editing target area is not the first type image frame; and  
35 re-coding the image frame which is created by decoding any of the  
36 third type image frame that appears after the first type image frame which  
37 appears first after the head image frame; wherein:  
38 said image coding method is an MPEG method;  
39 each of the groups is a GOP of MPEG;  
40 the first type image frame is an I picture;  
41 the second type image frame is a P picture;  
42 the third type image frame is a B picture; and  
43 wherein in a case where it is determined that a second GOP next to  
44 a first GOP to which a start point of an editing target area belongs is not a  
45 closed GOP, said second GOP is converted into a closed GOP by  
46 converting frames in the editing target area between an I picture at a head  
47 of the second GOP and a P picture such that the second GOP includes no B  
48 picture.

1        28 (Original). The image editing method according to claim 26, further  
2        comprising  
3                re-coding the image frames created by decoding the head image  
4        frame and each image frame appearing between the head image frame and  
5        the first type image frame which appears first after the head image frame,  
6        and re-coding any of the third type image frame that appears after the head  
7        image frame into the third type image frame which is able to be decoded  
8        without referring to an image frame which is arranged before the head  
9        image frame.

1        29 (Original). The image editing method according to claim 26, further  
2        comprising:  
3                decoding any of the third type image frame that appears after the  
4        head image frame of the editing target area in a case where said  
5        determining a type determines that the head image frame is the first type  
6        image frame; and  
7                re-coding the image frame which is created by decoding any of the  
8        third type image frame that appears after the head image frame into an  
9        image frame which is able to be decoded without referring to an image  
10       frame which is arranged before the head image frame.

1        30 (Original). The image editing method according to claim 26, further  
2        comprising:  
3                decoding any of the third type image frame that appears after the  
4        head image frame of the editing target area in a case where said  
5        determining a type determines that the head image frame is the first type  
6        image frame; and  
7                re-coding the image frame which is created by decoding any of the  
8        third type image frame that appears after the head image frame into the  
9        first type image frame.

1       31 (Original). The image editing method according to claim 26, further  
2       comprising:  
3               decoding any of the third type image frame that appears after the  
4       head image frame of the editing target area in a case where said  
5       determining a type determines that the head image frame is the first type  
6       image frame; and  
7               re-coding the image frame which is created by decoding any of the  
8       third type image frame that appears after the head image frame into the  
9       third type image frame which is able to be decoded without referring to an  
10      image frame which is arranged before the head image frame.

32 (Canceled).

1       33 (Currently Amended). An image editing method for editing image data  
2       which has been coded in accordance with an image coding method,  
3       wherein a plurality of image frames constituting the image data are divided  
4       into groups, each image frame is coded into one of a first type image frame  
5       which is created by coding based on data in the image frame, a second type  
6       image frame which is created by performing inter-frame mono-directional  
7       prediction based on a past image frame, and a third type image frame  
8       which is created by performing inter-frame dual-directional prediction  
9       based on a past image frame and a future image frame, and the image data  
10      is coded so that a head frame of each group may be the first type image  
11      frame, said image editing method comprising:  
12               setting an editing target area in the image data which has been  
13      coded in accordance with said image coding method;  
14               determining whether a first condition that the first type image  
15      frame which appears first in the editing target area is a head image frame  
16      which is arranged at a head of a group and a second condition that the  
17      group is a closed group which does not include the third type image frame

18       which is to be decoded by referring to an image frame included in a group  
19       which is arranged before the group are satisfied or not;  
20               decoding any of the third type image frame that appears after the  
21       first type image frame which appears first in the editing target area and that  
22       needs to be re-coded, in accordance with a result of determining the first  
23       condition and the second condition; and  
24               re-coding the image frame which is created by decoding any of the  
25       third type image frame that appears after the first type image frame which  
26       appears first in the editing target area; wherein:  
27               said image coding method is an MPEG method;  
28               each of the groups is a GOP of MPEG;  
29               the first type image frame is an I picture;  
30               the second type image frame is a P picture;  
31               the third type image frame is a B picture; and  
32               wherein in a case where it is determined that a second GOP next to  
33       a first GOP to which a start point of an editing target area belongs is not a  
34       closed GOP, said second GOP is converted into a closed GOP by  
35       converting frames in the editing target area between an I picture at a head  
36       of the second GOP and a P picture such that the second GOP includes no B  
37       picture.

1       34 (Original). The image editing method according to claim 33, further  
2       comprising:  
3               decoding any of the third type image frame that appears after the  
4       first type image frame which appears first in the editing target area, in a  
5       case where said determining determines that one of the first condition and  
6       the second condition is not satisfied; and  
7               re-coding the image frame which is created by decoding any of the  
8       third type image frame that appears after the first type image frame which  
9       appears first in the editing target area.

1        35 (Original). The image editing method according to claim 33, further  
2        comprising  
3                re-coding the image frame which is created by decoding any of the  
4        third type image frame that appears after the first type image frame which  
5        appears first in the editing target area into the first type image frame, in a  
6        case where said determining determines that the first condition is satisfied,  
7        and the second condition is not satisfied.

1        36 (Original). The image editing method according to claim 33, further  
2        comprising  
3                re-coding the image frame which is created by decoding any of the  
4        third type image frame that appears after the first type image frame which  
5        appears first in the editing target area into the third type image frame  
6        which is able to be decoded without referring to an image frame which is  
7        arranged before the head image frame, in a case where said determining  
8        determines that the first condition is satisfied, and the second condition is  
9        not satisfied.

1        37 (Original). The image editing method according to claim 33, further  
2        comprising  
3        copying the image frame which is created by decoding any of the third type  
4        image frame that appears after the first type image frame which appears  
5        first in the editing target area to the image data after being edited, in a case  
6        where said determining determines that the first condition and the second  
7        condition are satisfied.

1        38 (Currently Amended). An image editing method for editing image data  
2        which has been coded in accordance with an image coding method,  
3        wherein a plurality of image frames constituting the image data are divided

4 into groups, each image frame is coded into one of a first type image frame  
5 which is created by coding based on data in the image frame, a second type  
6 image frame which is created by performing inter-frame mono-directional  
7 prediction based on a past image frame, and a third type image frame  
8 which is created by performing inter-frame dual-directional prediction  
9 based on a past image frame and a future image frame, and the image data  
10 is coded so that a head frame of each group may be the first type image  
11 frame, said image editing method comprising:

12 setting an editing target area in the image data which has been  
13 coded in accordance with said image coding method;

14 determining whether a first condition that the first type image  
15 frame which appears first in the editing target area is a head image frame  
16 which is arranged at a head of a group and a second condition that the  
17 group is a closed group which does not include the third type image frame  
18 which is to be decoded by referring to an image frame included in a group  
19 which is arranged before the group are satisfied or not;

20 decoding any of the third type image frame that appears after the  
21 first type image frame which appears first in the editing target area and that  
22 needs to be re-coded, in accordance with a result of determining the first  
23 condition and the second condition; and

24 re-coding the image frame which is created by decoding any of the  
25 third type image frame that appears after the first type image frame which  
26 appears first in the editing target area, further comprising

27 inserting a first or second type image frame which appears  
28 immediately before a head image frame which is arranged at the head of  
29 the editing target area into the head of the editing target area, in a case  
30 where the head image frame is the third type image frame; wherein:

31 said image coding method is an MPEG method;

32 each of the groups is a GOP of MPEG;

33 the first type image frame is an I picture;

34           the second type image frame is a P picture;  
35           the third type image frame is a B picture; and  
36           wherein in a case where it is determined that a second GOP next to  
37           a first GOP to which a start point of an editing target area belongs is not a  
38           closed GOP, said second GOP is converted into a closed GOP by  
39           converting frames in the editing target area between an I picture at a head  
40           of the second GOP and a P picture such that the second GOP includes no B  
41           picture.

39 (Canceled).

1           40 (Currently Amended). An image editing apparatus which edits image  
2           data which has been coded in accordance with an image coding method,  
3           wherein a plurality of image frames constituting the image data are divided  
4           into groups, each image frame is coded into one of a first type image frame  
5           which is created by coding data in the image frame, a second type image  
6           frame which is created by performing inter-frame mono-directional  
7           prediction based on a past image frame and coding a difference obtained  
8           by the prediction, and a third type image frame which is created by  
9           performing inter-frame dual directional prediction based on a past image  
10          frame and a future image frame and coding differences obtained by the  
11          prediction, and the plurality of image frames are coded so that a head  
12          frame of each group may be the first type image frame, said apparatus  
13          comprising:  
14                an image coder which codes each of frames of image data into one  
15                of the first type image frame, the second type image frame, and the third  
16                type image frame;  
17                an image decoder which decodes the image frame coded by the  
18                image coder; and  
19                an image data analyzer which detects a head group which is

20 arranged at a head of an editing target area included in the image data and  
21 determines types of image frames included in each group,  
22 wherein: said image data analyzer determines whether or not the  
23 head group which is arranged at a head of the editing target area included  
24 in the image data is a closed group which does not include the third type  
25 image frame which is to be decoded by referring to an image frame  
26 included in a group which is arranged before the head group; and  
27 in a case where said image data analyzer determined the head group  
28 is not the closed group which does not include the third type image frame,  
29 said image coder converts a portion near the head of the editing target area  
30 into the closed group, wherein:  
31 said image coding method is an MPEG method;  
32 each of the groups is a GOP of MPEG;  
33 the first type image frame is an I picture;  
34 the second type image frame is a P picture; and  
35 the third type image frame is a B picture; and wherein  
36 in a case where said image data analyzer determines that a second  
37 GOP next to a first GOP to which a start point of an editing target area  
38 belongs is not a closed GOP, said image coder converts the second GOP  
39 into a closed GOP by converting frames in the editing target area between  
40 an I picture at a head of the second GOP and a P picture such that the  
41 second GOP includes no B picture.

1 41 (Currently Amended). An image editing apparatus which edits  
2 image data which has been coded in accordance with an MPEG method,  
3 said apparatus comprising:  
4 image data analyzing means for analyzing a structure of image  
5 frames included in each GOP of the image data, and determining an  
6 attribute of each GOP and picture types of image frames included in each  
7 GOP;



8 conversion point detecting means for detecting a GOP which needs  
9 to be re-coded from an editing target area of the image data, and an image  
10 frame which needs to be re-coded from the detected GOP;  
11 image decoding means for decoding the image frame which needs  
12 to be re-coded detected by said conversion point detecting means;  
13 GOP converting means for creating a new GOP by re-coding the  
14 image frame decoded by said image expanding means; and  
15 image data concatenating means for concatenating a plurality of  
16 image data which are cut out as editing target areas,  
17 wherein: said image data analyzing means detects a head GOP  
18 which is arranged at a head of the editing target area and determines  
19 whether or not the head GOP which is arranged at the head of the editing  
20 target area is a closed GOP; and  
21 in a case where said image data analyzing means determines that  
22 the head GOP of the editing target area is not a closed GOP, said GOP  
23 converting means converts a portion near the head of the editing target area  
24 into a closed GOP including no B picture, wherein:  
25 said image coding method is an MPEG method;  
26 each of the groups is a GOP of MPEG;  
27 the first type image frame is an I picture;  
28 the second type image frame is a P picture; and  
29 the third type image frame is a B picture; and wherein  
30 in a case where said image data analyzer determines that a second  
31 GOP next to a first GOP to which a start point of an editing target area  
32 belongs is not a closed GOP, said image coder converts the second GOP  
33 into a closed GOP by converting frames in the editing target area between  
34 an I picture at a head of the second GOP and a P picture such that the  
35 second GOP includes no B picture.